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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,756	10/16/2003	James Norman Barshinger	132226 (1306-35)	8695

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GE Global Research
Docket Room K-1/4A59
One Research Circle
Niskayuna, NY 12309

EXAMINER

HANLEY, JOHN C

ART UNIT PAPER NUMBER

2856

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/686,756

Applicant(s)

BARSHINGER ET AL.

Examiner

John C. Hanley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/16/03 & 2/13/05</u> . | 6) <input type="checkbox"/> Other: ____. |

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DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the convex, linear and plano-concave lenses of, for example, claim 6 must be shown or the feature(s) canceled from the claim(s). Similarly, discrete, divergent beams in the azimuthal and azimuth-depth plane, and the various aperture shapes of, for example, claim 24 must be shown. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 36 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification is silent as to the definition of F/D ratio.

4. Claims 26 and 40 are rejected under 35 U.S.C. 112, forth paragraph, for not further limiting claim 39 from which it depends. The recited range is broadened over the parent claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless '-

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 7, 11, 13-24, 33 and 37-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Alexandru (US-6089096).

7. Alexandru shows a two-dimensional imaging array having variable focusing abilities in both the aximuthal and elevational directions and an adjustable aperture. The capability recited in claim 7 of emitting a

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divergent beam is inherent in any transducer, given its size and the wavelength applied to the transducer element; i.e., every transducer is capable of issuing a divergent beam, depending upon the frequency of the signal applied to it.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5-6, 12, 34-36 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandru as applied to claims 1-4, 7, 11, 13-24, 33 and 37-38 above, and further in view of applicant's admissions.

10. Alexandru, in col. 2, lines 49-51, teaches that elevational focusing can be further enhanced with, for example, a lens. Applicant, in Figure 2, admits that elevational focusing can be performed with a concave lens. Such a lens would inherently produce one of a constant, an increasing, and a decreasing F/D ratio, as those choices cover all choices of F/D ratio types. It would have been obvious to use a lens as taught in Alexandru to further enhance focus in the elevational direction, and to make the lens a concave lens as taught by applicant's admitted prior art to do the enhancement in one of the F/D ratios recited by applicant.

11. Claim 8-10, and 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandru as applied to claims 7 and 18 above, and further in view of Entekin et al (US 5,305,756).

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12. Although Alexandru shows a lens in its Fig. 1 prior art that would appear to cause a divergent beam, it does not specifically teach this. However, Entrekin et al specifically motivates one to issue a divergent beam in the elevational direction by geometry and/or via a lens to insonify a region to be imaged. Thus, it would have been obvious to one of ordinary skill in the art to modify Alexandru to issue divergent beams from its transducer elements to insonify a volume, as taught by Entrekin et al. It would have been further obvious to one of ordinary skill in the art that divergence to insonify could be performed in any other direction via the same technique as in the elevational direction.

13. Claims 25-26 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexandru as applied to claim s 18 and 37 above, and further in view of Smith et al (US-4890268).

14. Although Alexandru teaches some of the effects of transducer elements of differing sizes, a specific teaching of their sizes in terms of acoustic wavelengths could not be found. However, in the transducer array of Smith cited by applicant as a model structure of an array, the operating frequency of 5MHZ cited therein, combined with the dimensions cited for the dimensions of the transducers, indicates that the transducers elements are in the .5 to about 20 acoustic wavelengths of the operating frequency. Thus, it would have been obvious to one of ordinary skill in the art to dimension the transducer elements of Alexandru to fall in the range of .5 to 20 acoustic wavelengths of the operating frequency, as taught by Smith.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ishrak et al shows a two-dimensional

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array for controlling focus in two directions, where the element faces are shaped to enhance focus. The Hasegawa et al references show acoustic lens systems for ultrasonic inspection systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Hanley whose telephone number is 571-272-2195. The examiner can normally be reached on M-F 9AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCH



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